Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

lar form, can be put together in the most complicated designs with extreme accuracy.

The machine for making the tesseræ is very simple. A vertical screw, worked by a horizontal handle twenty-four inches in length, is furnished with a steel die at the bottom, of the same shape as the intended tesseræ. Immediately below this die is a cavity formed in the bed of the machine $1\frac{1}{8}$ inch in depth, and corresponding in plan with the die which works into it.

The cavity being filled with the powder in as dry a state as possible, pressure is applied by turning the handle of the screw rapidly round, and the bulk of powder is thus reduced in thickness from $1\frac{1}{8}$ to $\frac{3}{8}$ of an inch, the surface being, moreover, rendered very smooth and polished. Each tessera when formed is raised from the bottom of the cavity by a movable bed or die worked by a vertical rod attached to a treadle, and when removed from the press the tesseræ are placed in an oven to undergo the process of baking. The tesseræ thus formed will bear a pressure of forty tons, and have been put to the most severe test in respect to the effect of frost, having been first immersed in boiling water, and immediately afterwards exposed to a temperature of 32°. They may likewise be exposed to a considerable degree of heat, so that flues may be constructed below the tessellated pavements, formed of this material, without causing any injury to them.

Blue or green colours are given to the tesseræ by means of metallic oxides in the process of baking; but other colours are mixed up with the powder before it is submitted to pressure.

Very compact and durable bricks are likewise made by a similar process, but are necessarily subjected to a much greater pressure, which is effected by the use of the hydraulic press.

Slabs of elaborate design and richly inlaid with brilliantly coloured designs, suitable for chimney-pieces, &c., are also made by this process, each slab being submitted to a pressure of 250 tons before baking.

BRAITHWAITE'S PROCESS OF PRODUCING IMITATIONS OF CARVING IN WOOD.

This invention was first produced in France, but has not been carried out to any great extent in that country.

In the carving of wood, as usually performed, two persons are employed, the one to cut out the intended subject in the rough, and the other to finish it. When a particular design is required to be executed by Mr. Braithwaite's process, a mould is made of cast-iron of the intended pattern, which is then heated to "cherry-red;" the heated mould being placed ready to receive the wood, viz. oak, chestnut, or other hard wood, to be acted on; the piece of wood is then rapidly, and with a power of from ten to thirty tons, according to the depth of the ornament pressed into the mould by means of a lever press; and this is repeated until the full relief is obtained. The wood is then thrown into cold water, the charred surface being afterwards scraped or brushed off, after each application to the mould. After about 250 impressions have been taken off the mould requires chasing; the whole number of impressions that may be taken from one mould is from 400 to 500.

MR. WILSON'S DOUBLE-ACTING SAFETY-VALVE FOR STEAM-BOILERS.

By Mr. Wilson.

The object of Mr. Wilson's safety-valve is to supersede the necessity of having two *detached* valves by combining them very neatly in one structure. The larger valve, to be used only in cases of emergency, is a conical disc, kept in its seat on the boiler by a weight suspended within the same; the smaller valve, intended for general use, has a solid conical plug, which fits an aperture in the centre of the larger or annular valve cover. The smaller valve is of about half the diameter of the larger, and is loaded *at the ordinary pressure*, either by spiral or elliptical springs, or if small, by weights as usual, whereas the load on the large valve is from half to one pound per square inch *above ordinary pressure*, so as only to be lifted when the smaller aperture is insufficient for the escape of a large volume of steam.

CASELLA'S PLUVIAMETER.

The pluviameter, or rain-gauge, invented by Mr. Casella, consists of a hollow cylindrical vessel, 23 inches high, and $3\frac{7}{12}$th inches in diameter, mounted upon a hollow base forming the segment of a cone, whose lower diameter is 13 inches, upper diameter $3\frac{7}{12}$th inches, and height 8 inches; this may be filled with dry sand, or other substance, to give steadiness to the apparatus, which is furnished with three pointed legs for the purpose of fixing it into the ground when required. At the top of the vertical cylinder is an open basin, of the same form and size as the base, perforated in the bottom with an aperture, equal to $\frac{1}{12}$th of an inch in diameter, through which the rain collected in the basin descends to the bottom of the cylinder, and the height of the column of water so